

Section 3-3: Slopes of Lines

By the end of this lesson, you should be able to answer:

- How do you find slopes of lines?
- How do you use slope to identify parallel and perpendicular lines?

Define the following:

1. Slope

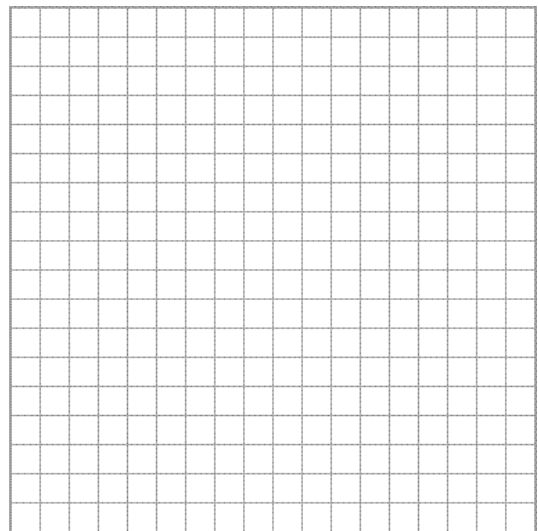
2. Rate of Change

Explore: Graph the points $A(-2, -4)$ and $B(3, 3)$. Then draw both a vertical and horizontal line through both and determine the distance between the vertical lines, then between the horizontal lines.

Distance between vertical:

Distance between horizontal:

Slope formula:



Example 1: Find the slope of the line that goes through the following pairs of points.

a. $C(-3, 4)$ and $D(8, 1)$

b. $E(5, -1)$ and $F(-3, 7)$

c. $G(-1, 2)$ and $H(-1, 7)$

d. $J(3, 4)$ and $K(-2, 4)$

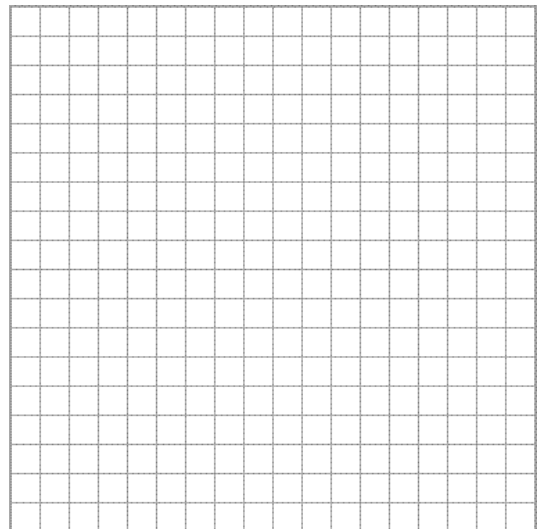
Example 2: In 2000, the annual sales for one manufacturer of camping equipment was \$48.9 million. In 2005, the total sales were \$85.9 million. If sales increase at the same rate, what will the total sales be in 2015?

Postulates:

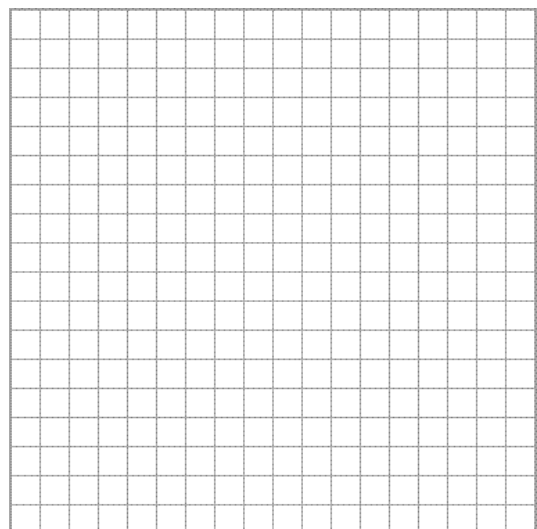
Slopes of Parallel Lines

Slopes of Perpendicular Lines

Example 3: Determine whether \overleftrightarrow{FG} and \overleftrightarrow{HJ} are parallel, perpendicular, or neither for $F(1, -3)$, $G(-2, -1)$, $H(5, 0)$, and $J(6, 3)$. Graph each line to verify your answer.



Example 4: Graph the line that contains $Q(5, 1)$ and is parallel to the line through $M(-2, 4)$ and $N(2, 1)$.



Problem Set:

"I have found power in the mysteries of thought." - Euripides